January 2010

Energy Services BULLETIN

Western's monthly energy efficiency and renewable energy newsletter dedicated to customer activities and sharing information on energy services.

Schools chosen to receive solar energy systems from SRP

Students at 14 Arizona schools will learn first-hand about solar power from photovoltaic (PV) systems the SRP Solar for Schools program will be installing on the school rooftops in 2010. Salt River Project (SRP) recently announced the schools in their service territory chosen to receive installation and maintenance of 10-kilowatt solar systems, as well as materials and training to educate students about solar energy.

Most of the chosen schools are located in SRP's service territory:

- Pendergast Elementary
- Tres Rios Elementary
- Estrella Vista Elementary
- Combs High School
- Carol G. Peck Elementary
- Desert Meadows School
- Trailside Point School
- Cheatham Elementary
- Vista Del Sur Traditional School
- Desert Vista High School
- Osborn Middle School
- Ira Murphy Elementary

SRP will also install PV systems at St. John's Middle School and Round Valley Middle School in northern Arizona.

Pendergast Elementary School in Phoenix, Arizona's first green-certified school, boasts water-wise landscaping, low-flow plumbing and daylighting measures, and will soon add a solar system from SRP's Solar for Schools program. (Photo by Pendergast Elementary School District)

Combined, the systems will generate 140 kilowatts of electricity for the Arizona school buildings and will produce approximately 224,000 kilowatt hours of energy per year. The solar energy production will prevent the release of up to 161 metric tons of carbon dioxide per year. Installation will begin as early as the spring and will be completed by the end of 2010.

Tool for math, science

Just as important as the power is the knowledge these systems will generate. Lori Singleton, SRP Manager of Sustainability Initiatives and Technologies, points out that the solar arrays will be a valuable education tool for the students. "SRP's goal in educating students about renewable energy is to teach the next generation of energy users about the clean, renewable sources that provide electricity today and in the future."

The education resources to accompany the solar system are being developed at SRP, with the help of math and science teachers. "Tina Drews, who is running the Solar for Schools program, will be writing the curriculum," said Communications Director Patricia Garcia Likens. "She has a doctorate in curriculum and instruction, so she is a great resource for SRP to have in-house."

The curriculum will teach kids about energy use and how solar energy works using data collected from the PV systems and hand-on activities related to renewable energy. "Math and science will be central components, as they are with other

See SOLAR ENERGY SYSTEMS page 2

What's inside

Solar energy systems

from page 1

SRP educational programs," Garcia Likens observed. "The focus is on creating the workforce that our industry—and Arizona—will need in the future."

Standard systems

The selection process factored in students' need for enhanced math and science programs, along with practical considerations like the age of the building's rooftop. Schools applying to the program underwent a preliminary inspection to determine if the infrastructure could support a solar array. The contractor SRP hires to perform the installation will assess the individual facilities and offer the schools several options based on the site's unique characteristics.

The solar arrays will be proven, off-the-shelf PV technology, as the goal of the program is not research and development. The schools will get about 16,000 kwh annually from their systems, or enough electricity for two classrooms, according to one school district's estimate. That is not enough power for SRP to buy back, even during school holidays. "What most people don't realize is that, between summer school and community events, the facilities are in use pretty much year around," said Garcia Likens.

Greener schools

Still, even the modest amount of renewable generation helps move schools closer to their goals of sustainability. Water conservation measures are becoming common at Arizona schools, said Garcia Likens, and some of the solar system recipients are aiming higher.

Pendergast Elementary, the first school in the state to be a green certified school, is already equipped with low-water plumbing and landscaping and uses natural daylight for some of its lighting needs. "This partnership with SRP will enhance our efforts to be green," Pendergast Elementary School District Superintendent Ron Richards said. "Our goal to generate 20 kilowatts of energy from renewable sources for this school has now increased to 30 kilowatts thanks to the SRP solar program. The savings we will see from the 30 kilowatts of renewable energy equates to one teacher's salary."

"Combs High School is looking forward to being environmentally responsible and it is expected this project will make significant contributions to protecting valuable resources and the environment for years to come," said J.O. Combs Unified School District Superintendent Jan Langer. "This project will also help educate students, staff and the community about the impact of environmental responsibility."

That's a lot of outreach for a few solar panels, not to mention several thousand kilowatts of clean energy. Clearly, SRP's Solar for Schools is one smart program.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2010/jan/jan101.htm

Energy Services Bulletin

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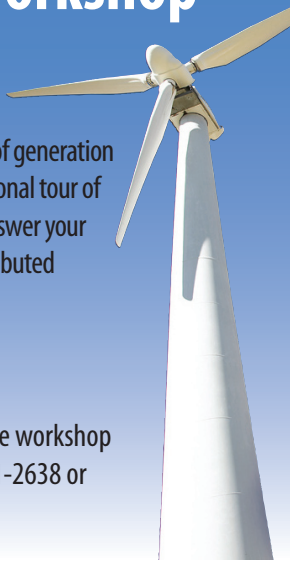
Wind Interconnection Workshop

January 20 - 22, 2010
Golden, Colo.



Are you ready to integrate the world's fastest growing form of generation into your power mix? This two-day workshop, with an optional tour of the National Wind Technology Center on Friday, Jan. 22, will answer your questions about interconnecting wind turbines and other distributed generation applications to electric distribution systems.

Participation is limited to the first 30 registrants.

To register, go to **http://windworkshop.govtools.us**

The registration fee is $300. For more information about the workshop agenda, please contact Bob Putnam, CH2M Hill, at 315-751-2638 or rputnam@ch2m.com.

Western, West River Electric sponsor Electro-Technology Expo

Utilities wanting to control their loads and builders wanting to create the most attractive product for potential buyers are natural allies. The Electro-Technology Expo on Jan. 14 will bring together professionals from both industries in South Dakota to explore new technologies—and investigate partnering opportunities—to meet their goals.

Western is teaming up with West River Electric Association, Black Hills Power and the Black Hills Home Builders Association (BHHB) to present this one-day workshop at the Ramkota Hotel in Rapid City, S.D. The sponsors are expecting a turnout of more than 300 attendees, including builders, contractors, electricians, HVAC specialists, engineers and facility managers.

Good for utilities

Now in its 10th year, the Expo is a great place for utilities in the region to connect with trade allies, said Energy Services Representative Mike Radecki. "One of the biggest challenges facing utilities in implementing energy-efficiency programs is finding contractors who are familiar with energy-saving systems and equipment," he explained.

Keeping up with the latest developments in the field is a challenge for power providers and municipalities too. West River Member Services Representative Willy Nohr pointed out a few presentations highlighting technologies relevant to those industries. "LED street lighting is a hot topic this year for towns that are looking for ways to reduce their electricity bills," he said. "FLIR will be teaching a class on infrared camera basics, and there will be case studies on smart metering, as well."

Other topics that might particularly interest utility professionals are line service and extension standards, geothermal systems and thermal conductivity testing, heat pump water heaters and Energy Star Home Performance Audits. Renewable energy is also on the agenda, with updates on wind energy interconnection standards and renewable energy applications and success stories. "Although energy efficiency is still the most economical option," Nohr pointed out.

Energy Services Technicians Dan DeJong (left) and Dale Buehler of Black Hills Power talk to a visitor to the utility's booth at the 2009 Electro-Technology Expo, a 10-year-old networking and education event in South Dakota. (Photo by West River Electric Association)

Builders support event

In a tight real estate market and struggling economy, familiarity with measures that reduce a building's energy consumption can give a contractor the competitive advantage.

Customers are looking for builders who know what the energy-efficiency options are, and often seek specialists in specific technologies, observed BHHB Executive Officer Cheryl Bettmeng. "Anyone in the building industry will find something at the Expo to expand on their knowledge," she said. "We incorporate our monthly meeting into the event to encourage our members to take advantage of the education opportunities."

In addition to the infrared camera workshop, sessions that count as continuing education for mechanical engineers, electricians and realtors are also on the schedule. Workshops are being offered on South Dakota and Wyoming electrical code updates, updates on LEED building standards, advances in in-floor heating systems and more. "The quality of the speakers keeps getting better every year," Bettmeng declared.

The Expo provides a forum for networking that is just as important to the BHHB as education. "The customers' growing interest in energy efficiency is definitely having an effect on the market," Bettmeng said. "It will take a coordinated effort from the building, utility and technology industries to meet these new expectations. The Expo is one of the ways we can create that community."

What customers want

Radecki agreed that the energy solutions today's consumers are looking for will come from partnerships that grow out of events like the Electro-Technology Expo. "The contractors who attend will be building—and retrofitting—the homes and offices that our customers' customers are buying," he said. "The vendors who exhibit will be selling the contractors the equipment and systems they put into the buildings. Utilities need to be a part of that conversation."

See ELECTRO-TECHNOLOGY EXPO page 8

Living and working near high-voltage power lines

Our customers'—and their customers'—safety comes first at Western. Energy Services Bulletin wishes our readers a safe and happy New Year with a reminder to take the necessary precautions when working around electricity.

High-voltage transmission lines can be as safe as the electrical wiring in our homes—or as dangerous. Education and awareness promote that safety. Do not allow human error to override common sense. If you live or work around power lines, the following tips could prevent accidents. If in doubt about specific situations, call your Western Area Power Administration regional office.

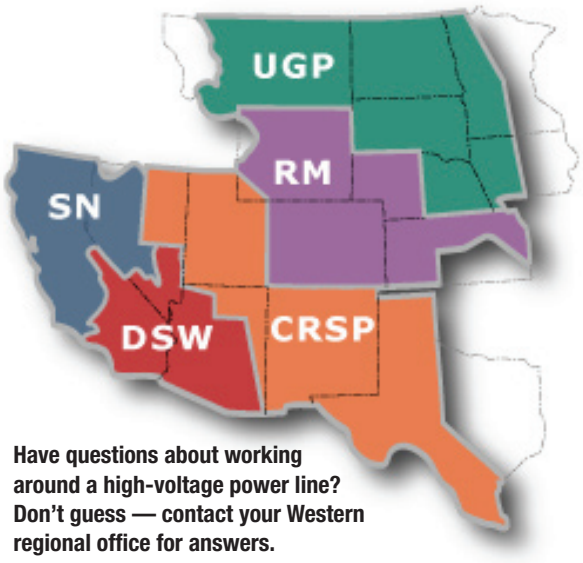
Respect lines

Western's facilities meet or exceed the rules of the National Electrical Safety Code and applicable state and local restrictions. Serious accidents involving transmission lines can be avoided if you take simple precautions. Treat all electrical systems—from the 120-volt wiring in your home to a 500,000-volt transmission line—with respect.

Avoid injuries

The most significant risk of injury from a transmission line is the danger of electrical contact. Electrical contact between an object and an energized conductor (wire) can occur even when the two do not touch. High-voltage transmission lines can create an electrical arc across an air gap. For example, during operation of a 500,000-volt line, arcing can occur across a distance of seven feet or more. This distance varies with line operating voltage. Unlike wiring at home, conductors of overhead transmission lines are not covered by electrical insulating materials.

Injuries occur more frequently with lower voltage power lines (12,500 to 115,000 volts) than with higher voltage lines because contact is more likely. The electrical conductors of lower voltage lines are closer to the ground, smaller and less noticeable. However, injury caused by contact with a 12,500-volt line can be just as serious as that from a 500,000-volt line.



Have questions about working around a high-voltage power line? Don't guess — contact your Western regional office for answers.

Built to code

The National Electrical Safety Code specifies a minimum safe clearance distance for each level of electric transmission voltage. Western lines are built so that clearance between line conductors and the ground meet or exceed code minimums.

Due to their weight, however, transmission line wires sag or droop between their supporting structures. These wires usually come closest to the ground halfway between supporting structures. Clearance is usually greatest near supporting towers or poles.

Watch out for tall equipment

Typically, harvesting combines, bale wagons, stack movers, cranes, derricks and booms can normally travel safely under all Western lines that pass over roads, driveways, parking lots, cultivated fields or grazing lands. However, it's always a good idea to look up and make sure your vehicles and large equipment—including antennas, rigging, etc.—are at least 15 feet from all power lines. Use caution when operating farm equipment under or near power lines, especially equipment that can be extended beyond 15 feet high, such as bale wagons, stack movers, dump bed trucks, cranes or derricks.

The 15-foot limitation is a general standard. In some instances, it can be exceeded without problems. However, transmission line sag increases when

See HIGH-VOLTAGE POWER LINES page 8

Even in cold weather, power lines sag slightly between supports. The droop is likely to increase in warm summer months.

ask the energy experts

Creating the workforce utilities need

Editor's note: The Energy Services Bulletin *features real answers to real questions posed to our staff at the Energy Experts Hotline. We hope you find it useful.*

Question:

What are utilities doing to prepare for the expected labor shortage in skilled workers?

Answer:

Public utilities are confronted with multiple issues in the workforce: retiring baby boomers, a younger generation with less interest in the utility profession, fewer college engineering graduates and an inability to compete with private sector salaries. Also, the nature of jobs in the utility field has shifted in recent years as technology has become more sophisticated. There are fewer manual jobs that don't require advanced training. For instance, utility workers may need a greater proficiency in math, science and computer skills than in previous years.

Public utilities are addressing the shortage in their workforce in a variety of ways. To remain competitive in the labor market, public utilities—through professional organizations like American Public Power Association (APPA)—are conducting annual salary surveys that can be customized by region, revenue class, and generation size.

Training new workers

Utilities are active in various types of workforce development, working through local educators and national organizations to create curriculums for employee training, or setting up their own in-house training programs. Community colleges are often eager to work with utilities to prepare students for available jobs. Iowa Community College and University has a growing technical program for municipal utility careers.

Energy Providers Coalition for Education (EPCE) is a group of industry representatives that designs, sponsors and promotes industry-driven, standardized, quality online learning programs to meet the workforce needs of the energy industry. Formed in June 2000 by the Council for Adult & Experiential Learning (CAEL), the coalition meets the training needs of utility workers who cannot attend traditional classes due to rotating work shifts and travel schedules.

APPA offers a Key Accounts Certificate Program to train frontline customer service employees. To receive certification, key account representatives must complete the three APPA key accounts courses, pass an oral and written exam and successfully file a business plan and customer marketing plan within three years of attending their first course.

Filling out ranks

Reaching young, potential workers means finding new ways to market specific job vacancies and advertise open positions. Using professional organizations to disseminate literature targeting students at the beginning of their careers has met with some success.

Utilities are also partnering with local high schools, colleges and mentoring programs. Florida Municipal Power Agency has developed the Joint Action Recruiting Program, which assists small municipal utilities in recruiting skilled workers. Colorado Springs Utilities is involved with INROADS, a not-for-profit organization dedicated to identifying, mentoring and placing talented minority youth in corporate positions. DEED scholarships are available to support college students in energy-related fields.

Re-hiring retirees on a contractual and part-time basis is another way utilities are retaining skilled workers. Veterans on staff, even part time, can mentor younger workers and pass on "institutional memory."

More resources

U.S. Bureau of Labor Statistics Occupational Outlook Handbook includes sections on Power Plant Operators, Distributors, and Dispatchers and Line Installers and Repairers.

"Innovative Workforce Solutions to Help the Energy Industry Address Hiring, Training, and Retention Challenges," from the Department of Labor (DOL) Employment & Training Administration, looks at the department's efforts to address workforce issues. State Contacts lists training and apprenticeship programs by state, along with state and local workforce training boards.

DOL's Office of Apprenticeship Sponsors includes a database of apprenticeship program sponsors by occupation and state, and a contact list of State Apprenticeship Councils.

Articles

- *"Strategies for Meeting Work Force Shortages"* Public Power Magazine; Jan.-Feb. 2006.

See ENERGY EXPERTS page 8

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2010/jan/jan104.htm

Web site of the month:

Energy-efficiency and renewable energy blogs

Blogs, the virtual spaces where anyone can hold forth about anything, have matured into valuable resources for research and dialogue—resources that utilities can use to educate their employees and their customers.

This column is not about why (or if) utilities should have their own blogs. That is a subject for another story...or three. The focus here is on blogs that can help power providers keep up on the latest developments in energy policy, energy-efficiency and renewable energy technology and a host of related issues.

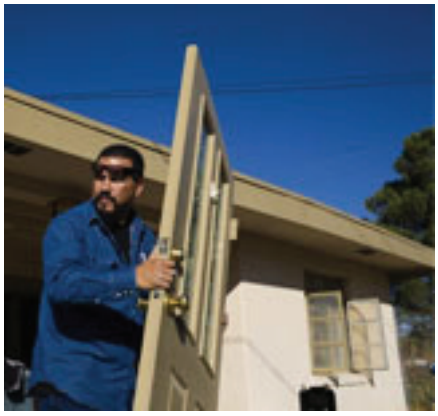
A brief introduction may be in order: a Web log provides commentary or news on a particular subject, with brief stories, images and links to other news resources and blogs. It is frequently updated, and generally allows readers to engage with the author by commenting on the content. Once the medium of choice for techies and "this is my life" commentators, blogs have been taken up by political pundits and advocacy groups. In the medium's latest evolution, businesses, industries and non-profits have adopted blogs as marketing and communications vehicles.

Even so, the "blogosphere" is often perceived as a wild frontier where zealots preach to the choir or do passionate battle with non-believers—and not without reason. A person doesn't need any particular credentials to start a blog, and opinion still makes up the bulk of blog content.

Picking the pros

That is changing as more professionals enter the world of social media. Here are some signs that a particular blog is a reliable resource.

- Frequent updates – Finding and creating content is time-consuming, so regularly updated posts are a good indication that blogging is part of the author's job, and not just a hobby. It is also likely that an organization is funding the blog to communicate a specific message.
- Transparency – You should be able to tell from scanning the page if a company or organization owns or sponsors a blog. Look for pages describing the organization and its mission, providing contact information and, if applicable, the blog's advertising policy.
- Credentialed contributors – Bloggers who offer information, rather than opinion, will usually include a byline with their posts, and occasionally a brief bio. Even though professional bloggers are often promoting a specific point of view, by providing their context and background, they give readers the chance to consider the source.
- Varied sources – Speaking of which, a blog that compiles news stories on specific topics should be running stories from a wide variety of publications. Again, transparency is important—content drawn from a company's or organization's press release should be identified as such.
- Reference citations – Blog posts that present statistics, quotes and other statements as facts should identify the sources with footnotes, links or reference lists. It is no guarantee of accuracy, but allows the reader to evaluate the quality of the information.
- Civil dialogue – Perhaps one of the best indicators of a blog's quality is the tone of the comments. Opinion blogs are notorious for hyperbolic diatribes, not to mention name-calling, that do nothing to clarify an issue. Many professional blogs moderate comments or have a comment policy to encourage polite discussion. Look for comments that focus on the issue, cite references for their assertions and offer links to other resources. Alert, informed readers can be great source of information.



Community Action Agency of Southern New Mexico, an organization that weatherizes low-income homes, is one of the success stories posted on the DOE blog Energy Empowers. (Photo by CAASNM)

Blogs from Uncle Sam

Blogging is a natural vehicle for public outreach, so it is not surprising that the U.S. government hosts blogs on a variety of topics, including energy, environment and agriculture.

The Energy Savers Blog from DOE's Office of Energy Efficiency and Renewable Energy provides consumers with a place to learn about and discuss energy efficiency

See WEB SITE OF THE MONTH page 7

Web site of the month *from page 6*

and renewable technologies at home, on the road and in the workplace. Utilities with small (or non-existent) budgets for energy-efficiency education can connect customers with new ideas by putting a link to Energy Savers Blog on their own Web sites.

Utilities seeking ideas for energy-efficiency projects may find inspiration on Energy Empowers. This DOE blog offers personal success stories of Americans improving efficiency, building sustainable businesses that create new jobs and using old skills in new ways to generate clean energy.

Rural cooperatives can reach out to agricultural customers with InfoFarm, a blog by the National Agriculture Library. Posts cover a broad range of topics from agri-tourism to marketing and trade to technology transfer. For agriculture news with a focus on policy, particularly on Recovery Act activities, check out the USDA Blog.

Strictly business

On the private side, news comes hard and fast and discussions get decidedly more heated, but don't let that stop you from stepping into—or at least listening—to the conversation. Energy-efficiency and renewable energy industry blogs can help you expand your understanding of the issues.

For news about sustainable energy policy, technology and economics, CleanBeta is an excellent source of articles reviewed by an editorial board of scientists, lawyers, executives and investors in the field. Posts cover such topics as emerging technologies, legal and regulatory issues, financing mechanisms and more.

Clean Energy Wonk covers similar territory, but is written by one individual. Tom Konrad, Ph.D. is a self-proclaimed "policy wonk" and investment analyst specializing in renewable energy and energy efficiency. Some posts, like a recent one on biochar, may be a little esoteric for general audiences, but Konrad's discussion on the trade-offs between economics and environment addresses an issue of great relevance to power providers.

Technology and more

Metaefficient reviews products independently for energy efficiency, as well as embodied energy, toxicity, affordability and durability. Although it targets a consumer audience, utilities may find it useful for evaluating equipment and services for rebate programs.

Key account managers who want keep up with energy conservation strategies in commercial real estate (CRE) will find a resource in Tony's Building Energy Performance Blog. Content covers trends in green building design, LEEDs and Energy Star certifications news and regulatory requirements. Posts also include trends in new solar solutions, retrofit technologies, and other issues impacting on CRE values.

The online newsletter Renewable Energy World, itself an excellent news source for the renewables industry, recently launched a blog. Contributors representing different aspects of the industry post pieces about policy, technology, finances and more.

To dig below the surface barely scratched here, visit Best Green Blogs, a directory of green- and sustainable-themed blogs. This site features eco-themed blogs from around the world along with detailed information about each site and their most recent postings. A green blog map lets visitors find writers in their area.

As you become more familiar with the world of blogs, you will undoubtedly discover more resources for utility professionals. Don't forget to share those finds with *Energy Services Bulletin*.

Reading blogs will also give you an idea of whether or not blogging might be a good way to communicate with your customers and, if so, what style and tone would best fit your message. Again, let us know, and your utility's blog could be our next Web site of the month.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2010/jan/jan105.htm

High-voltage power lines *from page 4*

lines become heated. Extending a piece of equipment near a line beyond the 15-foot height limit may be safe in December, but could mean disaster in July. Don't take chances—contact Western for review and specific requirements before extending equipment under a power line, and especially if you must exceed the 15-foot limitation.

If you need more information, or have questions about power lines you typically work around, call the Western regional office nearest you:

Arizona: Desert Southwest Regional Office P.O. Box 6457; Phoenix, AZ 85005-6457 Phone: 602-605-2525	Page Office P.O. Box 1120; Page, AZ, 86040 Phone: 602-605-2228
California: Elverta Maintenance Facility 7940 Sorento Rd.; Elverta, CA 95626 Phone: 916-353-4470	Redding Maintenance Facility 1545 Beltline Rd.; Redding, CA 96003 Phone: 530-247-6700
Colorado: Eastern Colorado Maintenance P.O. Box 3700; Loveland, CO 80539-3003 Phone: 970-461-7396	Western Colorado Maintenance Office 1800 South Rio Grande Ave.; Montrose, CO 81401-4800 Phone: 970-240-6200
Montana: Montana Maintenance Office P.O. Box 145; Fort Peck, MT 59223-0145 Phone: 406-526-3421 or 800-532-2641	**Nebraska/Wyoming:** Wyoming/Nebraska Maintenance Office 5600 Poison Spider Rd.; Casper, WY 82604 Phone: 307-261-5775
North Dakota: North Dakota Maintenance Office P.O. Box 1173; Bismarck, ND 58502-1173 Phone Numbers: 701-221-4500 or 800-422-0828	**South Dakota:** South Dakota Maintenance Office 200 4th St. SW; Huron, SD 57350-2474 Phone: 605-352-8112 or 800-365-9272

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2010/jan/jan103.htm

Electro-Technology Expo *from page 3*

Nohr hopes utilities will consider inviting key accounts, heating and cooling contractors and even realtors in their service territories to attend the Electro-Tech Expo. "When consumers are able to lower their utility bills, power providers gain more control over their own costs. It's good for everybody," he said.

The cost of the event is only $25 at the door, or get $5 off by preregistering today. Also, booth space is still available for vendors who would like to exhibit at the Expo. Contact Jeff Easton at 605-721-1269 for more information.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2010/jan/jan102.htm

Energy Experts *from page 5*

- Cohen, Ed. *"Knowledge Drain Will Hit Utilities Hard"* Electric Light & Power; May 2006.
- Peltier, Robert. *"World-Class Teaching Lab Prepares Next Generation of Plant Operators"* Power Magazine; June 2006.
- Swirlbul, Cathy. *"Out of the Gray: Retaining Older Employees"* Public Power Magazine; Jan.-Feb. 2006.